CALIFORNIA MARINA OIL RELATED FACILITIES PERFORMANCE

SURVEY RESULTS
2001

CALIFORNIA COASTAL COMMISSION

BOATING CLEAN AND GREEN CAMPAIGN

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD

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INTRODUCTION

Boating can add a variety of pollutants to the environment, including oil, fuel, sewage, solvents, paints, and other toxic substances, hazardous waste and marine debris. These sources of pollution have the potential to severely impact water quality, and as a consequence, the aquatic flora and fauna, and people who want to enjoy these aquatic resources. In California, there are over 1 million boat owners.[1] California boaters are concerned about protecting the environment while they use their boats. In a previous study conducted for the California Coastal Commission by the Public Research Institute (PRI) in 1998, many boaters (40%) felt that having recycling services to support clean boating practices at marinas would mean boaters would be more likely to employ environmentally sound boating practices. The survey also found that most boaters in California would be willing to use a wide range of such services if they were both convenient and low cost.[2] The Boating Clean and Green campaign encourages marinas and local jurisdictions to provide convenient, low-cost environmental services to the boating community. This survey was designed to assess existing oil-related services in order to provide useful information for future oil programs.

- **Previous Studies of Oil-related Services at California Boating Facilities**

In 1998, the Campaign conducted a study of boater practices in managing oil and fuel (Public Research Institute 1998). This survey revealed that 76% of boaters whose boats require oil changes are "do-it-yourselfers," that is, they change the oil themselves.

Additional research conducted regarding the availability of environmental services for Northern California boaters by the California Coastal Commission (California Coastal Commission and San Francisco Bay Conservation and Development Commission, 1998) and for Southern California boaters by the Santa Monica Bay Restoration Project (Santa Monica Bay Restoration Project, April 2000) indicates that there is a lack of availability of convenient and affordable environmental services to enable boaters to properly manage the wastes and discharges caused by operation of their boats. For example, the study of services in the San Francisco Bay/Delta region found that only 40% of marinas collected used oil for recycling, 10% collected hazardous waste for proper disposal, and 5% provided services to minimize the discharge of oily water from the bilge. There were almost no oil change services, and few services to collect oil filters for recycling. (California Coastal Commission, 1998). The study of services in the Southern California

[1] According to the Department of Motor Vehicles (DMV), there were 904,843 vessels registered in California in 2000. That is 26.2 boats per 1,000 Californians. However, the DMV registration process fails to account for a significant number of undocumented vessels. Many vessels are documented by other means. Thus, one can conclude that there are more than a million boat owners in California.

[2] For example, boaters whose boats had engines requiring oil changes indicated that, if services were free, 66% would use bilge pump-outs, 82% would use oil absorbent pads to reduce oily discharges, 62% would use oil change services, 64% would use oil collection containers for do-it-yourself oil changes, and 53% would use do-it-yourself oil change pumps. For a nominal fee of $5, there were still a significant number of boaters willing to use these services.

region conducted in 2000 provided similar results. In the study area (L.A., Orange and San Diego counties), 45% of marinas provided used oil collection, 15% provided hazardous waste collection, and none provided bilge pump-out services. (Santa Monica Bay Restoration Project, 2000) Each of the regions studied comprises a boating population of approximately 250,000 boaters; combined the studies cover an area that comprises half the boating population of the state and the two areas where boaters are most heavily concentrated.

The Boating Clean and Green Campaign is a statewide program conducted by the California Coastal Commission (the Commission) in partnership with the San Francisco Bay Conservation and Development Commission (BCDC) and funded by the California Integrated Waste Management Board (the CIWMB). The Campaign was created to reduce the impacts of boating on California's environment. The Campaign's main objectives are:

1) to educate boaters about environmentally sound boating practices;
2) to provide technical assistance to support local efforts to implement boater education, and
3) to assist marinas and local government to identify the need for and to install services that control pollution and increase used oil recycling.

One of the goals of the Campaign has been to identify the geographic gaps in services and to work with marinas and local government to fill those needs. Since the Commission began the Campaign in 1996 and while the CIWMB has simultaneously supported the efforts of local government to provide grant funds for oil-related services at marinas, several new services have been installed at marinas throughout the state. Since many of these services are fairly new to small vessel marine businesses, marina managers and local government used oil program managers seem equally interested in knowing about the successes and failures of these new services.

Used oil collection and recycling services have been in place at an increasing number of marinas over the last few decades. Recently, several new approaches are being implemented both to reclaim oil for re-refining and to minimize the discharge of oily wastes to marine waters. For example, in 1998, there were 5 bilge pump-out facilities in California. As of October 2001, there are approximately 16 such facilities in operation. These systems both reclaim oil and minimize oily discharge. Oil absorbent pad distribution and collection, and exchange programs are a recent innovation in preventing oily discharge from boats. Oil change facilities are also a method for both collecting more oil for recycling and preventing oily discharge.

- **Purpose**

The Boating Clean and Green Campaign conducted this survey in order to provide information about the performance of different types of oil-related facilities at marinas in California. This information is intended to assist marina operators and local government used oil program managers with implementation of oil-related services at additional marinas throughout the state. The investigation evaluates the successes and failures of existing services currently in operation. The results of this study will help to determine what issues need to be addressed to help marinas and marina operators provide better oil-related services to support environmentally sound boating.

- **Content**

The survey instrument was developed by The California Coastal Commission and conducted by the San Francisco Bay Conservation and Development Commission as part of their partnership in the Boating Clean and Green Campaign. The survey included questions about bilge pumpout facilities, absorbent pad distribution and collection, used oil collection and boater education. These questions address the performance of already existing oil-related services and are intended to elicit information that will assist marinas implementing these services in the future. The survey is included in this report as Appendix A.

- **Methodology**

The California marinas surveyed in this research were selected based on a previous oil-related facilities survey developed by the Coastal Commission on 1998 as well as anecdotal information about the availability of oil-related services provided by members of the California Clean Boating Network (CCBN) and local program partners of the Boating Clean & Green Campaign. In April 2001, 174 surveys were mailed (Appendix B). The deadline to receive survey responses was May 10, 2001.

- **Report Organization**

Section I analyses the survey responses for each type of oil-related service included in the survey. This section includes a geographical comparison of services to the number of boaters, as well as information about funding sources for oil-related facilities. Section II addresses the conclusions of this report. Section III discusses the oil related services recommended by the Clean and Green Campaign. Section IV provides an overview of grants and loans available to fund oil-related facilities. Section V addresses the results of an investigation developed by the Campaign about the availability of mobile boat maintenance services for bilge pump-out and oil change in California.

I. SURVEY RESPONSES

❖ Survey Response Rate

One hundred and eleven (111) out of the 174 marinas responded to the survey, representing a response rate of approximately 64%. Sixty three (63) marinas (36%) did not respond. Appendix C shows all the marina responses.

A. MARINAS IN CALIFORNIA WITH BILGE PUMP-OUT FACILITIES

- **Survey Findings**

Of the 111 marinas that answered the survey, 13 marinas (12%) have bilge pump-outs. In addition, the Campaign is aware of 2 other bilge pump-out facilities: 1 at the Hyde Street Pier in San Francisco and 1 at Moss Landing Harbor. Although these marinas did not participate in the survey, they have provided tours of their facilities to representatives of the CCBN. Therefore, with adequate information available to discuss their facilities, the Campaign has included them in this discussion. Eleven (11) of the bilge pumpout facilities at these fifteen marinas (73%) are connected to oil-water separators that reclaim used oil for recycling. Northern California has 8 pump-out facilities (north of the Monterey Bay), the Central Coast (Monterey Bay to Santa Barbara) has 4, and Southern California (Channel Islands and south) has 3. All of the existing bilge pump-out facilities are located on the coast. At this time, the Campaign is aware of 2 additional bilge pump-outs that are being installed in California, one in Oceanside and one in Santa Cruz.

The following is a summary of the descriptions of bilge pump-out facilities by the marinas that participated in this survey.

1. **Grand Marina,** Alameda County. (2099 Grand St. Alameda, CA 94501 ph:510-865-1200). *Although this marina responded to the survey with the following information, subsequent contact with the marina indicates that they no longer provide this service.* The bilge pump-out used in this marina has a diaphram type pump without an oil separator or any additional filtration system for the oil. The bilge pump-out can not handle bilge water contaminated with solvents or soaps. To install the pump, this marina needed a plumbing and construction permit issued by the City of Alameda. The facility is used approximately 2 times a month, and the amount of oil collected per month varies. The Grand Harbor Fuel Dock and the Grand Marina paid for the installation of the system. In addition, the Grand Marina is paying for the disposal and maintenance costs. The general public can use the system at a cost of $1.00 per gallon. The bilge pump-out is operated by fuel dock staff. The only problem reported by Grand Marina regarding the installation of the pump was with the Alameda County Board of Health and the United States Coast Guard that asked the harbormaster to comply with the marina's Best Management Practices in order to operate the system.

Advice from respondent: The marina recommended that other marinas not install a bilge pump-out until all the laws about bilge systems are clarified, so that the service will be in compliance.

2. **Port San Luis Harbor District**, San Luis Obispo County. (P. O. Box 249, Pier 3 Avila Beach, CA 93424 ph:805-595-5400). The Port San Luis Harbor has a coalescing oil-water separator manufactured by Douglas Engineering. To install the bilge pump-out facility, the marina needed to get approval from the local sewage treatment plant. The cost of the system was $10,000 which was paid by the San Luis Obispo Integrated Waste Management Board.[*] The effluent is discharged to the sewer system. The pump is being used twice per month. It collects approximately 2 gallons of oil per month. The system is available to the general public.

Advice from respondent: The Port recommends hiring a mechanical engineer to design the system and to compare pumps.

3. **Breakwater Cove Marina**, Monterey County. (32 Cannery Row Monterey, CA 93940 ph: 408-373-7857). The oil-water separator used by Breakwater Cove Marina is a centrifugal system manufactured by Liquid Centrifugal Processing and sold by Fluid Systems. The system uses a diaphram pump that pumps bilge water to a holding tank Contaminated loads (that is, oily water that contains soaps, solvents, antifreeze or other contaminants) are diverted for disposal as hazardous waste. Diesel oil, gear oil, fuel oil and gasoline can be separated by this system. It also includes polishing filters that are used as an additional filtration system for the oil. The system reduces oil to 90 parts per million (ppm) before entering the polishing filters. After filtration, the 2 stage filter reduces oils and metals to lower than the levels required by the Ocean Plan.[*]

The separation system can not handle bilge water contaminated with solvent antifreeze or soaps. The effluent from this system is discharged into Monterey Bay. The sanitary sewer district would not permit the system to discharge waste-water into the sewer system due to the salt water, except in the case of emergency e.g. soap-contaminated effluent.

In order to install the pump, the marina received permits from the California Coastal Commission (waiver), the City of Monterey, the California Regional Water Quality Control Board (National Pollution Discharge and Elimination System-NPDES permit) and the Monterey Regional Water Pollution Control Agency (MRWPCA) emergency conditional wastewater discharge permit.

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[*] Monies provided by local used oil programs, such as that of the San Luis Obispo Integrated Waste management Board's used oil program, come from grants to local government from the California Integrated Waste Management Board.

[*] State Water Resources Control Board and the California Environmental Protection Agency. 1997. "Water Quality Control Plan. Ocean Waters of California-California Ocean Plan."

Since April 2000, the use of the bilge pump-out facility is increasing almost daily. A range of 55 to 110 gallons of oil are being collected per month. The pumpout is used by 4 to 5 boats per week.

A grant provided by the City of Monterey, with funds provided by the CIWMB, paid for both the system installation and maintenance. The facility is operated by fuel dock staff and is available to the general public at no charge. The marina staff had some problems with the screen on the pumpout nozzle getting blocked with "gunk." The staff adopted a screen with a large mesh that is easy to wipe off rather than having to dismantle the nozzle. During a tour of the facility, the operator said it pumps at a rate of 60 gallons per minute. The cost of the system was $45,000 and on-going maintenance and the disposal of contaminated hazardous wastes cost approximately $10,000 per year.

4. **Channel Islands Harbor**, Ventura County. (3900 Pelican Way, Oxnard CA 93035 ph: 805-382-3007 Fax: 805-648-9211). Channel Islands Harbor has a gravity oil-water separator and a peristaltic pump-out available to the general public at no charge. The system was paid for by Ventura County with funds provided by the CIWMB. It is maintained by the Ventura County Harbor Department. The system can not handle bilge water contaminated with solvents or soaps. The effluent from the system is discharged into the sewer system. In order to install the facility, the marina needed to get a construction permit from the City of Oxnard. Currently, the system is being used less than 20 times a month and approximately 2 gallons of oil per month are being collected. The Harbor Patrol operates the system.

Advice from the Respondent: The Channel Island Harbor Department recommends close supervision of the facility operation. In addition, it recommends using peristaltic pumps since less maintenance is involved compared to a diaphram pump.

5. **Dana West Marina**, Orange County. (24500 Dana Point Harbor Dr, Dana Point, CA 92629 ph: 949-493-6222 Fax: 949-493-7531). This marina has a diaphram type of pump with an oil-water separator. The marina paid for the system and is currently paying for the waste disposal and maintenance costs. The system is only available to tenants and tenants directly operate the system. The effluent is discharged into the sewer system. The system can not handle bilge water that contains solvents or soaps. In order to operate the system, the marina needed to obtain a hazardous waste permit from Orange County. The marina is paying $130 for the oil and hazardous disposal. Dana West Marina did not report in the survey any problem with the system installation. The only on-going maintenance that is being provided to the system involves degreasing of the oil tank.

Advice from the Respondent: the marina recommends having close supervision of the system. Also, the marina recommends using a peristaltic pump instead of a diaphram pump since it involves less maintenance.

6. **Woodley Island Marina**, Humboldt County. (P. O. Box 1030 Eureka, CA 95502 ph: 707-443-0801 Fax: 707-441-4366). Woodley Island Marina has a coalescing oil-water separator manufactured by AFL and a diaphram pump. The effluent is discharged into the sewer system with a maximum quantity of oil permitted at 25 ppm. A permit from the City of Eureka was needed in order to install the pump. The system is available to the general public who use it at no charge. The Harbor District paid for the pump and is currently paying for the waste disposal and maintenance. The system is used approximately 10 times a month. Between 100-200 gallons of oil are collected each month.

Advice from the Respondent: the marina recommends limiting the public access to the pump since unrestricted use may cause abuse of the system.

7. **Morro Bay City Harbor**, San Luis Obispo County. (1275 Embarcadero Morro Bay, CA 93442 ph: 805-772-6254). This marina has a coalescing oil-water separator whose manufacturer is Great Lakes Environmental. The system vendor was Fluid Systems. The pump used by this marina is a peristaltic type. There is no additional filtration system for the oil. The system can not handle bilge water contaminated with solvents or soaps. Morro Bay City Harbor discharges the effluent into the sewer system. The system installation was handled by the County Waste Management Board which, in conjunction with the County, paid for the pump and is currently paying for the waste disposal and maintenance. The system is used 1 to 2 times a month, each time approximately 3 to 5 gallons of oil are collected. The system is open to the general public at no charge. Marina staff supervises the system operation. In terms of on-going maintenance, the marina has had to repair small PVC pipe leaks.

Advice from the Respondent: Morro Bay City Harbor recommends not allowing the public to operate the system unsupervised and to pick a simple system.

8. **California Yacht Marina-Chula Vista**, San Diego County (640 Marina Parkway, Chula Vista CA 91910 ph: 619-422-2595 Fax: 619-422-2696). The California Yacht Marina has a diaphram type of pump. Information about the oil-water separator was not provided. The marina needed to obtain a building permit from the City Planning Department in order to install the system. The effluent is discharged directly into the sewer system. The marina paid for the system installation and is paying for the waste disposal and maintenance cost. The system initial cost was $4,500 and $135 per quarter for hazardous waste collection. The pump is used approximately 15 times a month and 50 gallons of oil are collected. Only tenants are allowed to use the system with marina staff supervision. In terms of on-going maintenance, the marina has developed a weekly on-going clean-up which involves spreading absorbent and sweeping of contaminated absorbent.

Advice from the Respondent: the California Yacht Marina recommends obtaining funding for construction and materials through grants. Also the marina recommends

contacting the local municipal oil recycling agency to get information about containers and collection device prices.

9. **Vallejo Municipal Marina**, Solano County. (42 Harbor Way, Vallejo CA 94590 ph: 707-648-4370 Fax: 707-648-4660). The Vallejo Municipal Marina has a diaphram type of pump without an additional filtration system for the oil. Information about the oil-water separator was not provided. The system is open to the general public and is operated by the marina staff. The pump can not handle bilge water contaminated with solvents or soaps. The City of Vallejo is paying for the waste disposal and maintenance costs. The effluent is discharged into the sewer system. The marina is collecting approximately 1 to 15 gallons of oil per month.

10. **Oyster Point Marina**, San Mateo County. (95 Harbor Master Rd. #1 South San Francisco, CA 94080 ph: 650-952-0808 Fax: 650-871-7532). Oyster Point Marina has a gravity oil-water separator manufactured by RGF Marine Environmental Technologies. The bilge pump is a diaphram type. The system includes a secondary filter. The system is open to the public at no charge and is used under marina staff supervision. San Mateo County paid for the system with grant funds provided by the CIWMB. The County pays for the waste disposal and maintenance costs. Effluent is discharged into the sewer system. The marina obtained a permit from the City of South San Francisco and the San Bruno Water Quality Control Plant before the system was installed. The system can not handle bilge water contaminated with solvents or soaps. The pump is used 1 time per quarter year. An average of 2 gallons are being collected per month. As on-going maintenance the marina changes the filters and empties the oil tank.

Advice from the Respondent: Oyster Point Marina does not recommend this pump system since it is complicated to manage and is too large for the fuel dock space. The marina also mentioned that emulsifiers (often used by boaters to clean the bilge) corrupt the system.

11. **Eureka Public Marina**, Humboldt County. (531 K Street, Eureka, CA 95501-1135 ph: 707-441-4230 Fax: 707-441-4040). This marina has a skimmer type of oil-water separator manufactured by ASI industries and a peristaltic pump. The effluent is discharged into the sewer system. Permits from the California Department of Fish and Game, the California Coastal Commission, the US. Corps of Engineers and local governments were needed to install the bilge pump. The waste disposal and maintenance costs are paid by the City of Eureka and the Humboldt County Department of Environmental Health assists with disposal fees. The system is used once a month and usually less than 1 gallon of oil is collected. The system is available to tenants for free and with a $10 charge to the general public. The system is always operated under marina staff supervision.

Advice from the Respondent: the marina recommends closely monitoring what is being pumped out of each bilge in order to avoid fouling the system.

12. **Spud Point Marina**, Sonoma County. (P. O. Box 339 Bodega Bay, CA 94923 ph: 707-875-3535 Fax: 707-875-3436). Spud Point Marina has a gravity oil-water separator manufactured by Moffit Nichols Engineering and a diaphram pump. The system is available to the general boating public at no charge. The marina requires marina staff to operate the system. The system can not handle bilge water contaminated with soaps or solvents. The effluent is discharged into the sewer system. Some permits the marina needed to obtain to install the system included the underground storage tank permit issued by the County of Sonoma and a State license to handle hazardous waste. The system was paid for by Sonoma County. The County is paying for the on-going waste disposal and maintenance costs. The system is used approximately 50 times a month and an average of 350 gallons of oil are collected in that period of time. The on-going maintenance involves mechanical replacement of some parts of the diaphram pump and pipes.

Advice from the Respondent: Spud Point Marina recommends using a gravity system since its maintenance is much easier.

13.- **Pillar Point Harbor**, San Mateo County. (One Johnson Pier Half Moon Bay, San Mateo, CA 94019 ph: 650-726-5727 Fax: 650-726-7740). Pillar Point Harbor has a coalescing oil-water separator whose manufacturer is RGF Marine Environmental Technologies. The bilge pump is a diaphram type without any additional filtration system for the oil. The system is open to the public at no charge and is used under marina and fuel dock staff supervision. The effluent is discharged into the sewer system where 100 mg/L of oil is permitted. The County of San Mateo Environmental Health Department paid for the system with grant funds provided by the CIWMB. The San Mateo County Environmental Health Department pays for the waste disposal and maintenance costs. The system is used between 10 to 15 times a month and an average of 30 gallons of oil are collected per month. The on-going maintenance of the system involves changing filters and cleaning the machine.

14.- **Hyde Street Harbor,** San Francisco County *(not a survey respondent) (*Pier 1. San Francisco, CA 94111 pH: 415-274-0400).

15.- **Moss Landing Harbor**, Monterey County (*Not a Survey Respondent*)(7881 Sandholdt Rd, Moss Landing, CA 95039 pH: 831-633-2461). The system of Moss landing harbor is part of a multi-faceted waste discharge and recycling system purchase through $145,000 in grants from the CIWMB. This one-stop self- service center includes three oil-related services; including a pressure wash system for cleaning the bilge, a bilge pump-out for oily or contaminated water, and a crankcase oil pump for oil changes. In addition, the system includes a sewage pump-out system purchased with separate funds from the Department of Boating and Waterways.

The bilge pump and related services can be operated by a boater after he or she has been trained by marina staff, however, staff is generally available to oversee its operation. The bilge pump system includes a coalescing unit for oil water separation operated by a

peristaltic pump. The harbormaster prefers a vertiflex pump. The system includes an oil content meter that is set at 10 ppm and shuts down if effluent exceeds that limit. The system pumps at a rate of 50 gallons per minute.

They add an emulsion breakdown product at the front end to treat emulsified oil and to capture the oil for recycling. When the pH (potential Hydrogen) is neutral (close to 7), they add products such as UniforChem or Nalco to a holding tank containing emulsified oil. In 5 hours, the oil is released from the emulsion and tested using the flashpoint test to be sure it is recyclable.

The system pumps oily water to a holding tank and contaminated, or soapy water to a separate tank. Oily water gets processed by the coalescing system. Reclaimed oil is diverted to the oil tank for recycling.

Effluent is sent through a polishing unit containing activated charcoal. During initial tests, the system discharged water containing non-detectable levels of oils, grease, and petroleum products.

The Moss Landing harbormaster feels that the coalescing system involves less mechanical maintenance than a centrifugal system. He thought the centrifugal system is subject to mechanical contamination by large particulate matter. Coalescing systems, he said, become a hassle for cleaning, but his system gets most of the oil out before it goes through the coalescing unit, because most of the oil is skimmed off from the holding tank.

The harbormaster keeps track of the amount of oily water processed by having boaters fill out a card each time they use the systems. Extensive signage and education of tenants regarding the use and availability of the system is part of the success of the facility. Neither the local Certified Uniform Permitting Agency (CUPA) nor the State Department of Toxic Substances Control required a permit as this was not considered a treatment facility. The harbor obtained a low threshold discharge permit from the regional Board. Table 1 summarizes the responses provided by the marinas regarding bilge pump-outs.

- **How Used Oil Collection and Bilge Pump-Out Facilities are Regulated in California**

    - Used Oil, Filter, and Absorbent Pad Collection

Regulations that apply to generators and transporters of used oil and used oil filters in California are codified in Chapter 6.5, Division 20 of the California Health and Safety Code (HSC), including Article 13 (commencing with section 2520), and Title 22 of the California Code of Regulations (CCR), Division 4.5, including Chapter 29 (used oil) (commencing with section 66279.1) and section 66266.130 (used oil filters). If you generate used oil, oil filters or other hazardous waste in California, you should consult with your Certified Unified Program Agency (CUPA). To find out more about CUPAs,

TABLE 1

go to the following website: http://www.calepa.ca.gov/CUPA/. For more information about used oil and filter management, see the Fact Sheets provided in Appendix H.

A marina that is a public agency or one that has the sponsorship of a public agency can collect hazardous wastes (including oil and oil filters) under the **Conditionally Exempt Small Quantity Generator (CESQG**) program (see HSC section 25218). You must notify your local CUPA of any hazardous waste collection programs, including oil and oil filter recycling. Recycle-only operations may be exempt from the requirement of manifesting hazardous waste transportation and disposal.

An EPA Identification Number must be obtained by any business that **collects and stores used oil** or hazardous waste, except for generators of 100 kilograms or less of hazardous waste (including used oil) per month who ship or transport used oil under a modified manifest (HSC 25250.8). Used oil must be stored in tanks or containers that include secondary containment and meet the requirements for condition and for labeling specified in CCR section 66262. Used oil handlers (generators, collection centers, transporters, etc.) must determine whether the total halogen content is over or under 1,000 ppm. Used oil containing more than 1,000 ppm total halogens is presumed to have been mixed with halogenated hazardous waste and must be managed as a Resource Conservation and Recovery Act (RCRA) hazardous waste unless the used oil can be demonstrated not to have been mixed with halogenated hazardous waste (the is referred to as the "rebuttable presumption.")

California law requires that a registered hazardous waste transporter **transport used o**il. Exceptions to this requirement are enumerated in the fact sheet provided in Appendix H.

Used oil filter collection and recycling information is provided in the fact sheet included in Appendix H.

Spent absorbent pads can be accumulated in leak-proof containers and managed as hazardous waste, according to the regulations for generators of used oil and hazardous waste cited above.

- Bilge Pump-Out Facilities

Permits for Discharge of Waste Water: Waste water can be discharged to the local sanitary sewer system and Publicly Owned Treatment Works (POTW) only if the local sanitary sewer agency permits the discharge. You will need to contact your local sanitary sewer district. Discharge of waste water to local water resources requires a National Pollution Discharge Elimination System (NPDES) permit from the local Regional Water Quality Control Board (RWQCB). A list of local RWQCBs is provided in Appendix I.

Waste Storage, Transport and Treatment Regulations: The permit requirements for management of oil related to oil-water separators used in bilge pump-out facilities are determined by local CUPAs (see note above). However, the Department of Toxic

Substances Control (DTSC) developed some guidance for clean boating programs and marina operators in determining whether or not bilge pump-out facilities would be considered a form of hazardous waste "treatment." If a bilge pump facility collects oily or contaminated bilge water and does not treat or process the water for disposal, but simply has the water removed and disposed of as hazardous waste, the operator must comply with generator standards set forth in 22 CCR in Chapter 12, beginning with section 66262.10. If the bilge water is removed and treated on-site in an oil-water separator, the generator should first notify the CUPA. This activity may qualify as "treatment" under the tiered permitting sections of Title 22 of the HSC (sections 25201 et. seq.) and Section 67450.4 of the CCR. The following processes are not considered "treatment" under HSC section 25123.5, filtering, sieving, unaided phase separation during storage. Oil-water separators that include skimmers, coalescing plates, and centrifugal separation have been interpreted by DTSC to be "treatment," therefore requiring authorization under the "tiered permitting" program. For clarification of these regulations, contact your local CUPA and refer to the flowcharts provided in Appendix I.

❖ **Summary of Lessons Learned about Bilge Pump-outs from the Survey Respondents**

- Lesson #1: Be Careful about What Goes through Your System

The most common advice provided by marinas that have bilge pump-outs is that emulsified oils and contaminants foul most systems. Most operators handle this problem by having the bilge pump-out system operated by their own staff who closely supervise what gets pumped through the system. Otherwise, they have the operation by the boater closely monitored by staff. Moss Landing Harbor trains boaters to use the system the first time and then allows repeat users to operate the system on their own. This approach makes sense in a commercial harbor where boat operators are likely to be repeat users.

- Lesson #2: Have a Plan for Handling Emulsified Oil

The most common method for handling emulsified oil is to pump it out into a separate tank or container and have it disposed of as hazardous waste. This method of waste disposal is costly. One marina (Moss Landing Harbor) is successfully reclaiming emulsified oil through the bilge pump-out by adding emulsion break down products that cause the oil to separate. The system that this harbor uses can then process the oily water and separate the oil for recycling.

Lesson #3: Choose Systems that Are Simple and Have Low Maintenance

Several marinas recommended picking simple systems as they are easier to maintain. In terms of pumps, several respondents felt that peristaltic pumps are less likely to break down and are easier to maintain. The gravity separator and skimmer systems are the simplest type of oil-water separation systems. Coalescing and centrifugal separators have

more parts, require more maintenance, and are able to reduce the concentration of oil in the effluent to lower levels than simple gravity separation.

Lesson #4: Contact your Local Used Oil Recycling Program

Each municipality has an agency that receives used oil recycling grant funds from the CIWMB. These local used oil programs may be willing to purchase equipment as well as provide funds for on-going operation and maintenance, including waste collection and disposal costs. Call your local used oil agency to obtain funding assistance as well as information about oil collection devices and equipment. If you need help identifying this local used oil program, contact the CIWMB at (916) 341-6000 for assistance.

Lesson #5: Get Professional Help

If you feel uncomfortable choosing a system to meet your facility's needs, you may be able to get assistance from the local used oil program (mentioned in Lesson 4). However, some marinas recommend hiring a mechanical engineer to design the system and to compare pumps.

B. ABSORBENT PAD DISTRIBUTION AND COLLECTION

In California, clean boating programs encourage marinas and fuel docks to engage in active distribution of oil-only absorbents in order to minimize oily discharge from boats. These programs also recommend that distribution should be accompanied by collection, safe storage, and proper disposal services for spent or used absorbents.

The purpose of this section of the survey was to report on the experience of marinas that are actively distributing and collecting free pads as a way of reducing oil and fuel discharges from boats. Of the 111 marinas that responded to the survey, 42 marinas indicated they have a distribution and collection absorbent pad program (this amount includes those marinas distributing absorbent pads on an emergency basis, upon request, and those that have absorbent pads for sale). Of these 42, 12 are "active" (distributing more than 10 pads per month), 11 marinas distribute pads on an emergency basis and collect them. The remaining 19 marinas did not provide information about their program and collection, or distribute less than 10 pads per month. In addition, 2 marinas of the 19 (Fortman and Spud marinas) sell pads and collect them. Ventura Harbor Village distributes absorbent pads but does not collect them. All 12 of the "active distribution" marinas provide both distribution and collection (Table 2).

The amount of absorbent pads that marinas distribute per month ranges between 1 and 300. However, marinas reported that on average between 30 and 50 absorbent pads are actually given out. Most, marinas collect approximately the same amount of pads as they distribute.

Table 2. Marinas Distributing More than 10 Free Absorbent Pads per Month.

Marina	County	Address	City	State	Zip Code	Phone Number	Fax Number
Dana Point Marina-East	Orange	24701 Dana Dr.	Dana Point	CA	92629	714-496-6137	
Channel Island Harbor	Ventura	3900 Pelican Way	Oxnard	CA	93035	805-382-3007	
Dana West Marina	Orange	24500 Dana Point Harbor Dr.	Dana Point	CA	92629	949-493-6222	949-493-7531
Bethel Harbor	Contra Costa	P. O. Box 70	Bethel Island	CA	94511-0070	510-684-2141	
Berkeley Marina	Alameda	201 University Ave.	Berkeley	CA	94710	510-644-6376	510-644-8649
Redondo Beach Marina	Los Angeles	181 North Harbor Dr.	Redondo beach	CA	90277	310-374-3481	310-372-7779
Morro Bay Harbor	San Luis Obispo	1275 Embarcadero	Morro Bay	CA	93442	805-772-6254	
Oyster Point Marina	San Mateo	95 Harbor Master Rd. #1	South San Francisco	CA	94080	650-952-0808	650-871-7532
Suisun City Marina	Solano	800 Kellogg St.	Suisun City	CA	94585	707-429-2628	707-421-7222
Pillar Point Harbor	San Mateo	One Johnson Pier	Half Moon	CA	94019	650-726-5727	650-726-7740
Brisbane Marina	San Mateo	400 Marina Blvd.	Brisbane	CA	94005	650-583-6975	650-583-6798
Eureka Mooring Basin	Humboldt	531 K Street	Eureka	CA	95501-1135	707-441-4230	707-441-4040

The apparatus used by marinas to distribute oil absorbent pads include:

- Hand them directly to the boaters
- Plastic drum enclosure
- Plastic newspaper racks on fuel docks
- Dockwalkers [1]
- Boater information packets

Some of the vendors marinas purchase absorbents from include:

- Counties (e.i: Orange and San Mateo County)
- Svendsens
- Evergreen Environmental
- American textile
- CRI Recycling Supplies
- Shore Power
- New Pig
- Redwood Oil Company
- Blue Ribbon Supply
- Safety Clean

[1] Dockwalkers: Volunteers trained by the Boating Clean and Green Campaign and Save Our Shores to teach boaters to employ environmentally sound boating practices. Dockwalkers conduct face-to-face boater education out on the docks at boat launch ramps, and at boating events. In addition, they distribute ~~using ""pier pressure" to keep our waters clean distributing~~ educational materials to boaters. For more information about Dockwalkers visit http://www.coastal.ca.gov/ccbn/ccbndx.html or call (415) 904-5214 (California Coastal Commission 2001)

The most popular vendors among the active marinas are Svendsens and Shore Power.

The hauler/collection company of 9 active marinas (69%) sends the spent pads for recycling. Four (4) marinas (31%) do not know whether or not pads are recycled. None of the marinas knows the type of recycling or reclamation process used by the collection company. Most of the hauler/collection companies pick up any type of absorbent pads.

Advice from the Respondents: in order to improve absorbent pad distribution and collection programs, marinas recommended that program operators:

1) advertise the service,
2) supervise the collection process, and
3) place the pads in a secure location to avoid contamination by other hazardous wastes.

C. USED OIL COLLECTION FACILITIES

- **Percentage of Respondents that Collect Used Oil**

This section of the survey provides information about used oil collection facilities in the marinas. Fifty nine (59) marina respondents (53%) have used oil collection tanks. The other 52 (47%) of respondents do not have used oil tanks and therefore did not respond to the questions addressed in this section. A previous survey conducted in the San Francisco Bay and Delta (California Coastal Commission and San Francisco Bay Conservation and Development Commission 1998) showed that 49 marinas (44%) from 111 marinas that participated in the survey have used oil disposal areas. A similar survey conducted by the Campaign in Southern California in 2000 showed that 31 of 69 marinas surveyed (45%) had used oil collection facilities Southern California (Santa Monica Bay Restoration Project *et al*. 2000).

This survey shows a higher percentage of respondents collecting used oil than in the 2 earlier surveys because this survey pre-selected marinas known to have oil-related facilities based on the 2 previous surveys and other information gathered by the Campaign. The percentage (53%) is not an indicator of the percent of marinas that collect used oil state-wide. It is more likely that the earlier surveys cited above, which surveyed marinas in areas where boaters are most heavily concentrated throughout the state, are better indicators of the numbers of marinas that provide used oil collection services (approximately 40-45%).

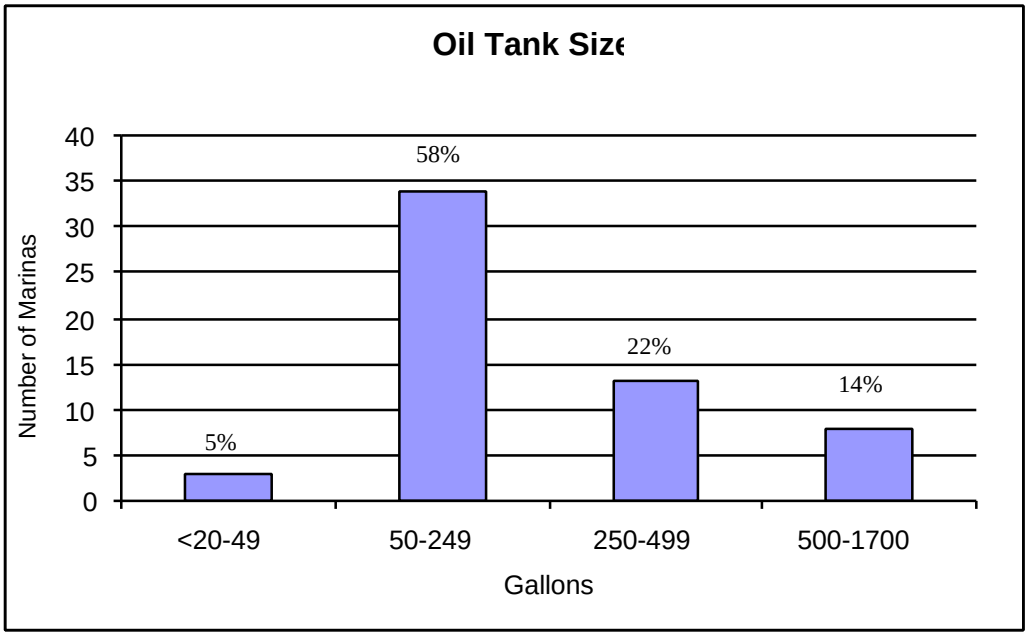
Of the 59 marinas that indicate they collect used oil in this survey, only 1 marina was a CIWMB certified center (i.e. offered a $.16 per gallon rebate). Several respondents reported that even if their marinas do not offer used oil disposal services, their tenants may not be underserved. Several harbormasters mentioned that boaters take used oil to a nearby used oil collection center or gas station. Whether or not these nearby collection

centers provide adequate service to the tenants of these marinas would have to be determined on a case by case basis.

- **Tank Size**

In order to analyze responses regarding oil tank sizes, 4 categories were created based on the results. The results are summarized in Figure 1. The following results provide percentages based on the aggregated number of marinas that have used oil collection facilities (59). Figure 1 shows that 34 marinas, (58%) have oil tanks that can hold between 50 and 249 gallons of oil. Thirteen (13) marinas (22%) have oil tanks that hold between 250 and 499 gallons. Eight (8) marinas (14%) have oil tanks that can hold between 500 and 1700 gallons. Three (3) marinas (5%) have oil tanks that can hold between less than 20 and 49 gallons. One (1) marina did not answer this question.

Figure 1. Marinas Surveyed and Used Oil Tank Sizes



- **Quantity of Oil Collected**

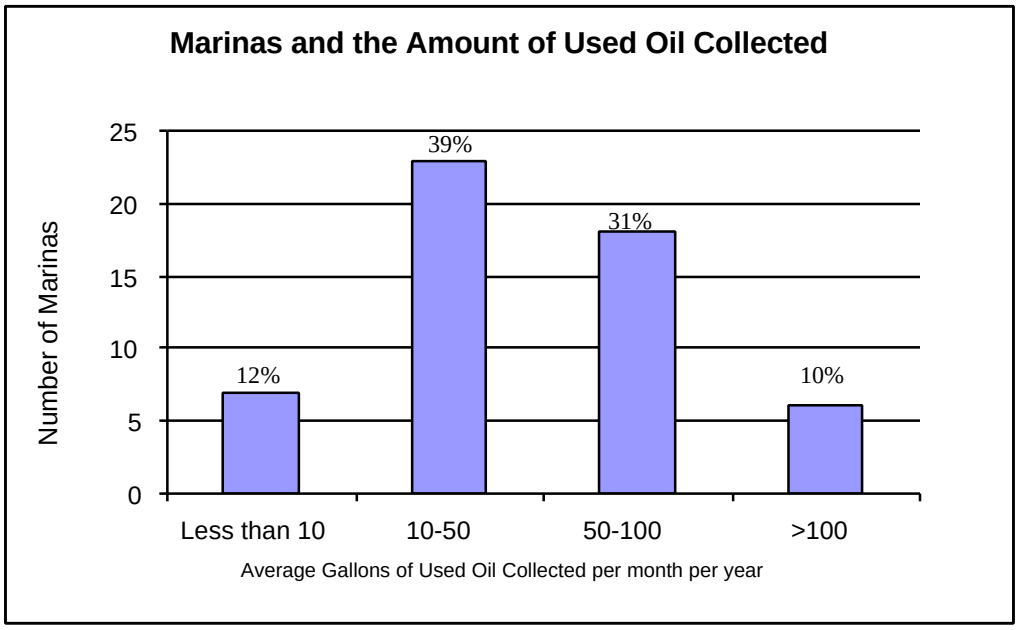
The survey also shows seven (7) marinas (12%) collect less than 10 gallons of oil each month. Most of the marinas (23 or 39%) collect between 10 to 50 gallons, 18 marinas (31%) collect between 50 and 100 gallons of oil per month, and 6 marinas (10%) collect more than 100 gallons of oil per month (Figure 2). Five (5) marinas did not answer this question.

Regarding to the availability of the used oil collection facilities to the general public, 33 (56%) marinas' oil facilities are not open to the public. On the other hand, 26 marinas

(44%) allow the general public to use their facilities (see Table 3). Only three marinas (5%) charge for the use of the oil collection facility. The prices reported are $1, $1.75

and $6 per gallon. Most of the marinas (56 or 95%) provide the service for free (see Table 3).

Figure 2. Marinas and Amount of Used Oil Collected



- **Boater Access versus Contamination**

Thirty (30) marinas (51%) reported that their used oil collection facilities are directly accessed by boaters. Direct access means that boaters pour oil into their tanks without supervision or oversight by marina staff. Eleven (11) marinas (19%) reported that boaters have supervised access to the oil collection facility. That is, marina staff members assist boaters by pouring the used oil into the tanks or by checking the oil before the boater pours it into the tank. Eighteen (18) marinas (31%) do not allow boaters to directly access the facility. Thus, boaters can leave oil outside the tank or have the oil collected by appointment so that only trained personnel pour oil into the tank (See Table 3). Figure 3 shows these results.

Twenty-two (22) marinas (37%) are CIWMB "certified" centers. Most of the marinas did not know whether they were certified (See Table 3). Appendix G describes used oil collection centers and how to become one.

Twenty five (25) marinas (42%) experience contamination of the oil by solvents or other hazardous wastes and water . These marinas reported that their contamination occurs between 1 to 5 times a year.

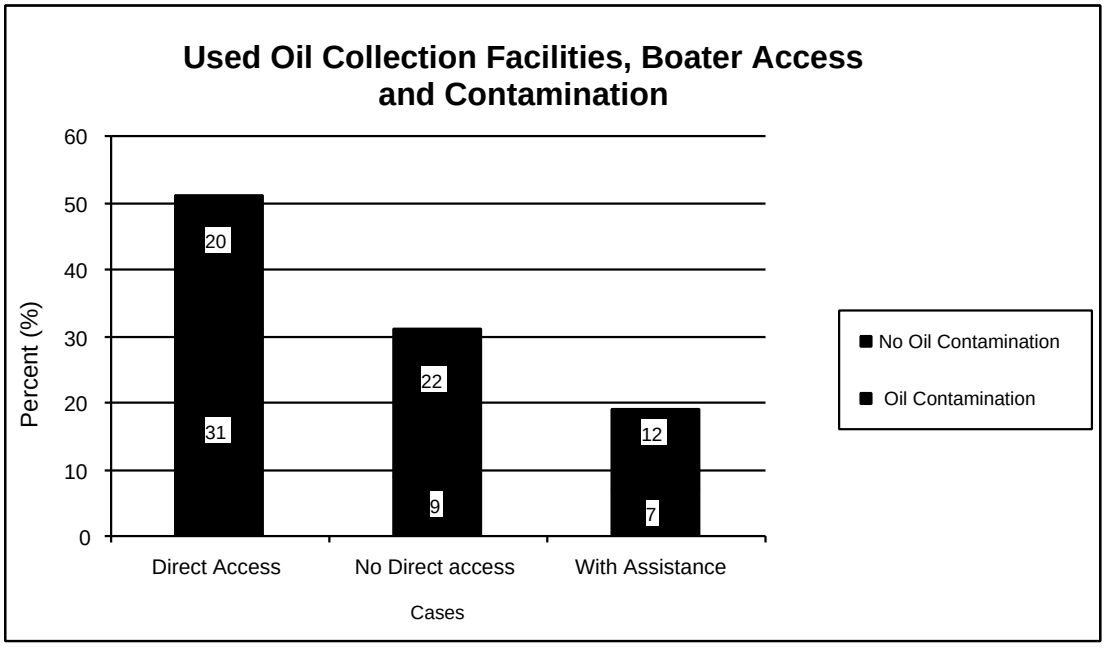
TABLE 3

TABLE 3

TABLE 3

The results show a direct correlation between the amount of direct access boaters have to the disposal area and the incidence of contamination (see Figure 3). Of the marinas surveyed that provide no direct access to the tanks to their boaters (31%), 72% have not had any problems with contamination. Of the marinas that provide oil collection services that allow boaters access to the oil collection tanks only with supervision by marina staff (19%), 64% have not had any problems with contamination Of the marinas that provide oil collection services that allow boaters to directly access the tank (51%) only 40% report having no problems with contamination.

Figure 3. Used oil Collection Facilities, Boater Access and Oil Contamination



One can conclude that in order to minimize the risk of contamination, oil collection programs at marinas should not allow boaters to directly access the collection facilities or at a minimum should provide boaters with supervised access.

- **Access Versus Volume Collected**

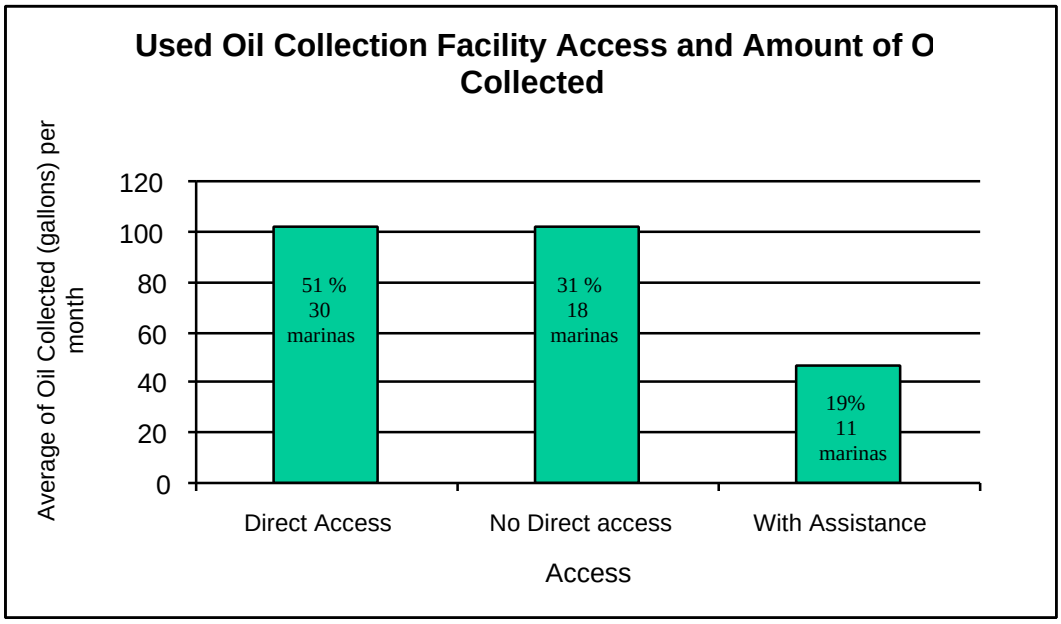
When the number of marinas that allow varying levels of boater access to oil collection facilities is cross-tabulated with the amount of oil collected by the marinas, marinas that provide direct access and those that provide no direct access are collecting the same

average number of gallons of used oil per month (101 gallons). Marinas that permit boaters to access oil collection tanks with marina assistance collect less (an average of 47 gallons of oil per month, See Figure 4). Recognizing that these figures are based on a low number of respondents and are therefore statistically inadequate to be considered

reliable, these results can only be used to develop some inferences, but not reliable conclusions.

An explanation of why the direct access and no direct access programs are collecting the same average volumes per month and those that require supervised access are collecting almost half as much is speculative and based on the experience of the Boating Clean and Green Campaign in the field. This difference may be explained by the fact that with no direct access and direct access programs, boaters can go to the oil collection facility any time, at their convenience, to drop off oil. Where boaters have no direct access, they usually deposit their small containers of used oil in front of or next to the facility. With direct access, they pour the contents in immediately. However, those boaters that access the oil tanks with supervision have to find a marina employee who may only be available on certain days of the week or at specific times. Since convenience has been shown in other studies to effect boater propensity to engage in environmentally sound boating practices, this may be an example of how less convenient programs yield lower collection rates.

Figure 4. Used oil Collection Facilities, Access and Amount of Oil Collected



Some recommendations provided by the marinas in the operation and maintenance of the used oil collection facilities included:

- educate boaters about what a contaminant is;
- always supervise the used oil collection facility;
- use signage to advertise the facility;
- lock the facility;

- create a set of instructions of how to use the system;
- secure the facility during non-business hours;
- do not use underground tanks;
- staff should attend the California first operational responder class for proper clean up procedure.

D. COMPARISON OF SERVICES TO NUMBER OF BOATERS

Table 4 summarizes the geographic distribution of survey responses by County. In addition, information about bilge pump-outs, absorbent pad distribution and collection, sewage pump-outs, used oil collection facilities and oil change facilities provided by the San Francisco Estuary Project, the State of California Department of Boating and Waterways, a marina notice sent out by the Boating Clean and Green Campaign, the Boating Clean & Green Campaign Tide Books, Southern California Boater's Guide is included.

Table 4. Marina Facilities and Geographical Results by County

County	No. of Boats Registered *	No. Marinas	Berths	BP (%)	APD (%)	APC (%)	UOC (%)	SP (%)	OCH (%)
Alameda	30,758	11	5,332	1 (9.1%)	9 (81%)	7 (64%)	9 (81%)	11 (100%)	
Contra Costa	38,799	24	4,568	1 (4.2%)	4 (17%)	4 (17%)	9 (37%)	13 (54%)	
Humboldt	7,422	2	357	2 (100%)	2 (100%)	2 (100%)	2 (100%)	2 (100%)	
Los Angeles	124,038	17	7,935	0 (0%)	3 (18%)	3 (18%)	8 (47%)	4 (24%)	
Marin	9,948	9	2,564	0 (0%)	1 (11%)	2 (22%)	5 (56%)	6 (67%)	1 (11%)
Napa	7,196	6	1,312	0 (0%)	2 (33%)	2 (33%)	1 (17%)	2 (33%)	2 (33%)
Monterey	9,204	4	653	2 (50%)	3 (75%)	3 (75%)	3 (75%)	3 (75%)	1 (25%)
Orange	76,818	11	4,304	1 (9.1%)	3 (27%)	2 (18%)	6 (55%)	7 (64%)	
Sacramento	44,409	17	3,296	1 (6%)	3 (18%)	2 (12%)	2 (12%)	16 (94%)	
San Diego	65,000	16	4,503	3 (19%)	2 (12.5%)	2 (12.5%)	9 (56%)	9 (56%)	
San Francisco	4,436	5	1,818	2 (40%)	3 (60%)	2 (40%)	3 (60%)	4 (80%)	1 (20%)
San Joaquin	24,297	15	3,032	1 (6.7%)	1 (6.7%)	1 (6.7%)	3 (20%)	13 (87%)	
San Luis Obispo	12,481	5	193	2 (40%)	2 (40%)	1 (20%)	2 (40%)	1 (20%)	
San Mateo	14,218	7	2,889	2 (26%)	7 (100%)	7 (100%)	6 (86%)	6 (86%)	
Shasta	17,202	2	210	0 (0%)	1 (50%)	1 (50%)	1 (50%)	0 (0%)	
Solano	15,390	5	1,758	1 (20%)	3 (60%)	2 (40%)	4 (80%)	5 (100%)	
Sonoma	19,890	5	904	1 (20%)	1 (20%)	1 (20%)	2 (40%)	3 (60%)	
Ventura	26,093	10	4,046	1 (10%)	3 (30%)	2 (20%)	6 (60%)	2 (20%)	

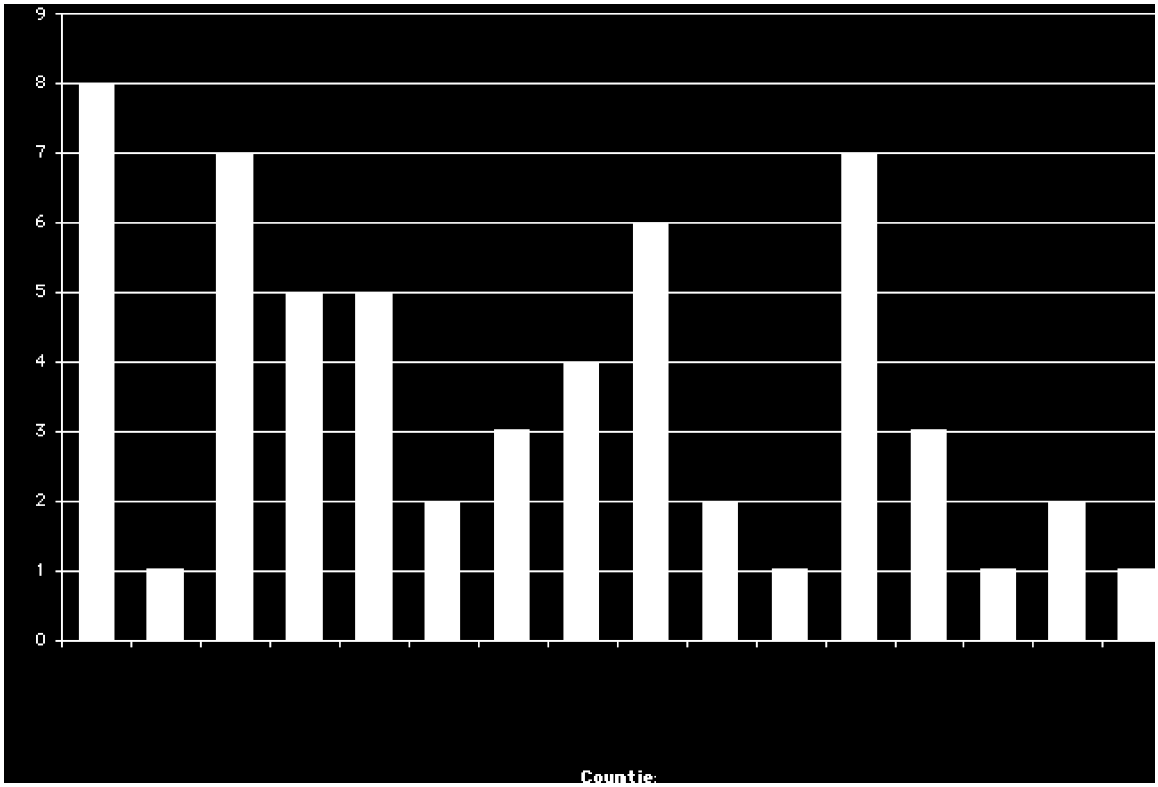
* From the Department of Motor Vehicles Vessel registrations for the Year 20001
BP: Bilge Pump-out OCH: Oil Change Facility APD: Absorbent Pad Distribution SP: Sewage Pump-out APC: Absorbent Pad Collection UOC: Used Oil Collection

Boaters in Alameda, San Mateo, Los Angeles, Marin, Orange and Contra Costa counties are better served with used oil collection facilities having more than 4 facilities per county. In contrast, the survey revealed that San Francisco, Sacramento, Shasta and

Sonoma counties may be somewhat under-served in terms of used oil collection since only 1 facility was reported in each county (Figure 5 and Table 4).

Boaters in northern California are better served by most of the services evaluated, such as bilge pump-out facilities, relative to southern and central California. Statewide, there are more absorbent pad distribution and collection, used oil collection and sewage pumpout services than bilge pump-out and oil change services. The survey revealed that the marinas in San Mateo County and Humboldt County provide most of the services identified. The County of Monterey also provides a wide range of services at most of its marinas. On the other hand, the survey shows that counties such as Contra Costa, Los Angeles, Sacramento, San Diego, Orange and San Joaquin, where 10 or more marinas in each county participated in the survey and where more than 20,000 boaters are registered, may underserve the boating community in terms of the services analyzed.

Figure 5. Used Oil Collection Facilities per County



However, it is important to consider that boaters registered in certain counties frequently use their boats in other counties, as the 1998 California Coastal Commission survey suggested[2]. Future research should take this into account.

Even though this geographical analysis provides a general picture of the services in California, it is important to point out that values could be underestimated since not all the marinas in California participated in the survey. Some marinas may be providing services that are not included in the findings of this investigation. There are currently no state or federal guidelines as to the quantity of services that should be provided in a given boating population.

E. EDUCATION

A major premise of the Boating Clean and Green Campaign is that boaters need education, in addition to adequate numbers of convenient facilities and services, to support environmentally sound boating practices. In order to know how marinas are helping boaters to conduct environmentally sound practices, this survey included a section about the efforts marinas are making to educate boaters about the use of oil-related facilities.

Some of the techniques marinas use to advertise the availability of oil related facilities services include:

- Newsletters
- Invoice inserts
- Billing notes
- Handouts
- Dockwalkers
- Signs
- Website
- Word of mouth
- Seminars
- New tenant orientation

Most of the marinas use a combination of these techniques. Figure 6 shows the frequency each of these techniques was reported.

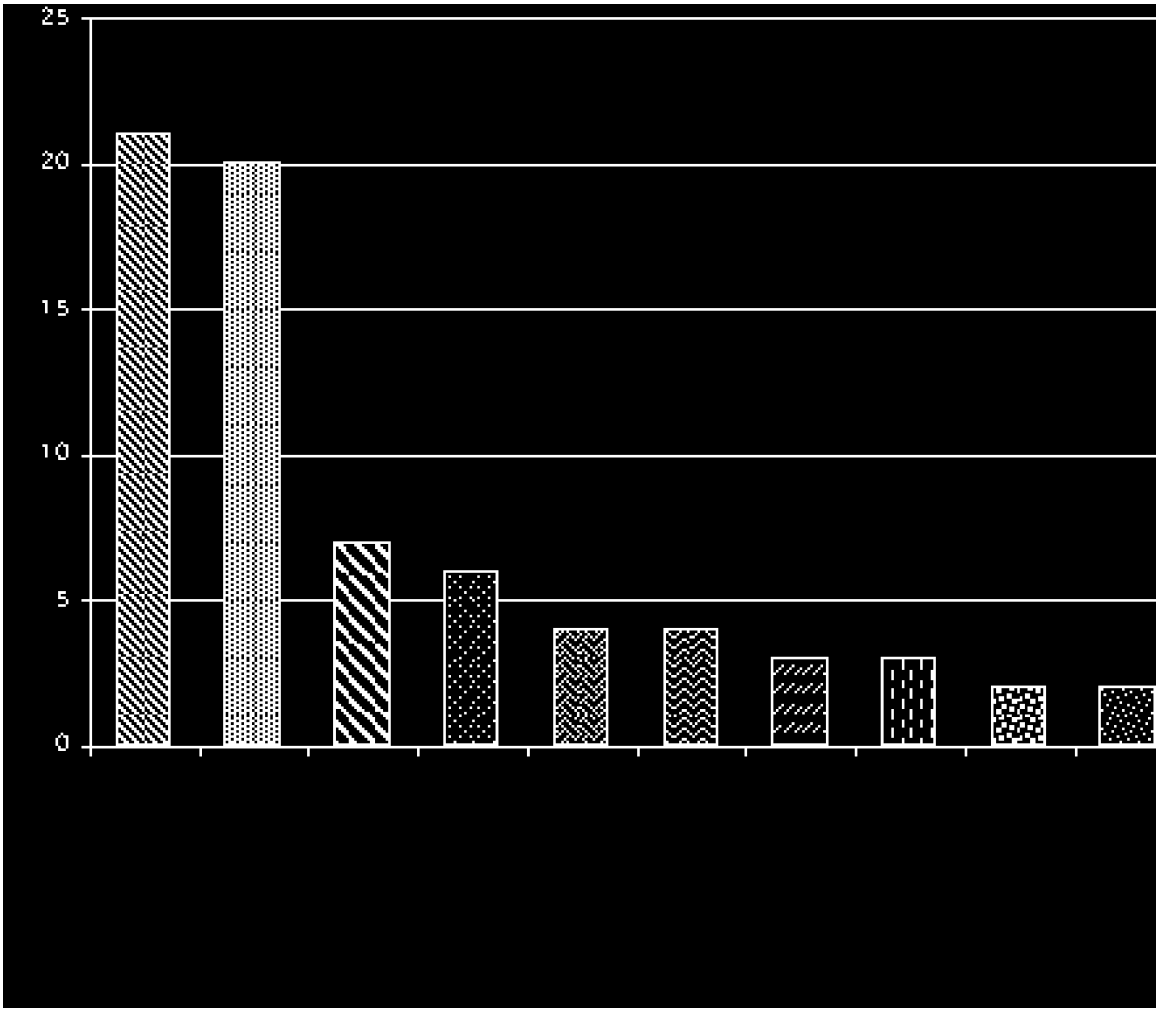
[2] The 1998 California Coastal Commission survey reported the largest proportion (42% of respondents boat on inland lakes. 24% of respondents reported boating on the coast, 9% boat on rivers, and 8% boat somewhere else. 64% of the Northern California respondents stated that either the San Francisco Bay or the Delta was their primary boating location. Southern California respondents reported boating more on the coast than did the Northern California Boaters.

Highest frequencies were reported for techniques such as newsletters and signs. On the other hand, few marinas use seminars and websites as methods to advertise the availability of oil-related facilities.

Similar techniques and methods used by the marinas to advertise oil-related facilities were reported to educate boaters about how to use these services. The methods marinas reported include:

1. Best Management Practices
2. Word of mouth
3. Newsletters
4. Dockwalkers program
5. Posters and signs
6. Seminars
7. Websites

Figure 6. Techniques Used by Marinas to Advertise Oil-Related Facilities Availability



❖ **Boating Clean and Green Recommendations for How to Increase Effectiveness of Education and Boater Use of Services**

- **When installing a new service, plan a proactive educational campaign.** Establish and implement environmental policies and strategies at your facility. Be helpful and post names and locations of outside services for waste collection services that you do not provide. Let people know what you are doing and why. Distribute educational materials to your tenants, including information about environmental services at your marina.

- **Contact the Boating Clean and Green Campaign.** The Campaign can provide you with assistance for your boater education efforts such as signs and help from Dockwalkers in educating your boating community. For more information about the Campaign visit http://www.coastal.ca.gov/ccbn/ccbndx.html or call (800)COAST4U.

- **Find clean boating information on the web** (Appendix F)
- **Other methods** that could help in your educational efforts are:
  - develop marina environmental policies for tenants and make them part of tenant lease conditions;
  - post signs informing tenants and other boaters of marina environmental policies;
  - provide dock-box signs that instruct boaters about marina environmental policies and the availability of environmental services;
  - circulate information about environmental services at your marina and nearby in monthly tenant invoices;
  - train marina staff in clean boating practices and have staff educate tenants as part of their day-to-day contact with tenants; and
  - make sure the waste collection and recycling facilities at your marina include signs that give boaters clear guidance about facility usage and paper waste management.

II. CONCLUSIONS BASED ON SURVEY RESPONSES

This survey was designed to identify the different types of oil-related services that marinas have installed, to provide information about the performance of these systems, and to gain a better understanding of both the successes and failures of existing services currently in operation. The information yielded from the survey is not a complete picture of oil-related services provided to boaters at California marinas, since the survey was not sent to all 500 marinas in the state. Even if it had been sent to each marina in the state, typical response rates do not yield absolutely comprehensive results. However, with 111 respondents, this report provides a general picture of the types of oil-related services and how they are performing.

❖ General Conclusions About the Survey

Unfortunately, many respondents failed to provide detailed or informed answers to questions about services that they do provide. For example, many respondents did not know what type of bilge pump-out equipment they had, who the manufacturer of the equipment was, or how much oil was being collected from their oil-water separator or their used oil tanks. The following conclusions about the lack of information yielded from some of the respondents, is based on the nature of the answers provided as well as the comments of the respondents that were surveyed over the phone.

- *Marinas are tired of responding to surveys.* Many respondents expressed their frustration with the number of surveys sent to them by government agencies and are

less than enthusiastic about the expenditure of time required to respond to these surveys.

- *Many respondents failed to have knowledgeable staff answer the questions.* Since many of the responses failed to provide basic information about the systems, the Campaign was unable to collect the type of answers anticipated.

- *In some cases, marina operators knew little about their systems because the local used oil program had researched and purchased the equipment and/or continued the operation and maintenance of the equipment.*

- *Many marinas are not tracking the collection of oil from bilge pump-outs.* Since most of the oil collected from bilge pump-outs goes directly into the oil collection tank with other crankcase oil collected by the facility, marinas do not know how much oil is diverted from bilge pump-outs.

- *Many marinas did not take the time to research their oil disposal or absorbent disposal records to provide precise information about the amount of waste collected or disposed per month.*

- *Many of these programs are too new to provide reliable information about their performance.*

Based on the experience of conducting this study, the Campaign suggests that future efforts to study the performance of these types of facilities ought to be based on a case study approach. The Campaign recommends identifying several bilge systems, oil collection programs, and absorbent pad exchange programs that represent the cross-section of services in place at California marinas and doing on-site case studies that will yield more detailed analyses.

❖ Bilge Pump-out Facilities

Many respondents agreed that using peristaltic pumps requires less maintenance and is more user friendly. Several mentioned that the easier you make it for the boater, the more inclined they are to use the bilge system. In addition, many marinas recommended limiting public access since the system is liable to be abused. Marinas felt that it is very helpful to have contact with local and municipal government agencies for information about how to construct these systems, as well as materials available through grants. While many marinas seem to be concerned about their systems being vulnerable to fouling caused by emulsified oil, 1 marina seems to have solved this problem by using emulsion break-down products. The Campaign intends to investigate these products further and circulate information about them through the CCBN.

❖ **Absorbent Pad Distribution and Collection**

In general, the absorbent pad exchange programs are relatively new. Those programs that have advertised the exchange program well are the ones receiving the most boater participation. Northern California counties such as San Mateo, Alameda, Ventura, Orange and Humboldt have more than 1 active absorbent pad and collection program. On average, between 30 to 50 absorbent pads are given out. Overall, most of the marinas that are distributing free absorbent pads are collecting similar amount of used pads; the flat sheet is the most common type of pad.

❖ **Used Oil Collection Services**

Fifty-three (53%) percent of the marinas that participated in the survey have used oil collection tanks. The reluctance of the marinas that don't provide this service is in part due to the fact that used oil collection facilities require adequate supervision, and as a consequence, are time consuming. In addition, many marina operators fear the hassle and expense of dealing with contaminated loads. Most of the marinas surveyed have oil tanks that can hold between 50 and 249 gallons of oil. In addition, most of the used oil collection facilities are free, open to tenants only and operated directly by boaters.

Based on the results of the survey, the Campaign concludes that marinas with tanks that are not directly accessible to boaters (i.e. they can't pour the oil into the tank themselves), but where boaters can leave their oil on a spill-proof surface next to the tank, are likely to collect more oil than those that require staff supervision of oil recycling, or limit the hours that boaters have access to the tanks. Furthermore, the facilities that provide no direct access are less likely to be contaminated with oil than marinas that are directly accessed without marina supervision.

❖ **Education**

A combination of different educational methods and techniques such as newsletters, signs and word of mouth, are the most common tools helping marinas to educate boaters about the use of oil-related facilities and to advertise their availability. Marina operators felt that the amount of and type of education employed can increase the usage of these services. Signage was considered to be a particularly effective educational tool.

Recommendations for the Future

One of the Boating Clean and Green Campaign's goals is to minimize the effect of boating practices on aquatic ecosystems. In order to minimize environmental impacts, the Campaign helps to develop partnerships between local government, marinas and boaters to achieve pollution prevention. Education is essential to forging such a partnership. The Campaign recognizes that local government and marinas use education and outreach to make boaters more aware of the effect of certain practices such as discharging oily bilge water, or disposing used oil absorbent pads in the trash, among others. However, boaters will not implement environmentally sound practices unless it is easy and convenient to do so.

In terms of pollution prevention, marinas should consider installing a system that helps boaters reduce oily discharge such as bilge pump-out or absorbent pad exchange program. To encourage their use, these services be sited for convenience and easy access near fuel docks, waste oil pump-out and sewage pump-out facilities. The Campaign also recommends that all marinas carry a line of effective oil absorbent materials to be used in minimizing fuel spills and oily discharges. Marinas that distribute oil-only absorbents should also provide for collection and proper disposal of used absorbents. In addition, marinas should teach customers that these materials after being used are considered hazardous waste and should be disposed of in an appropriate facility, not the trash. Additional education about safe use and handling of absorbents is essential.

The best way to prevent on-site mismanagement of hazardous wastes is to collect these wastes for tenants. With proper permits, marinas can collect waste anti-freeze, used absorbents and oil recycling and other hazardous wastes, such as paints and solvents. If marinas collect these wastes on-site for disposal, marinas must comply with the hazardous waste generator regulation of their local regulatory agencies and the State Department of Toxic Substances Control. Storage areas must meet local agency regulations, including signage, spill prevention, fire prevention, and emergency response requirements. Staff that handle, store, dispose and clean up hazardous wastes must undergo specific training. If marinas do not provide receptacles for hazardous wastes, they need to inform boaters that it is illegal to dispose of these products anywhere except a hazardous waste collection facility. The Campaign also recommends that marinas create an Oil Spill Contingency Plan and train their employees to be familiar with the protocols of the plan.

The Boating Clean and Green Campaign encourages marinas to ask for the cooperation of tenants, boaters and users of the facilities. To be most effective enlisting their cooperation, harbormasters should let customers know that the marina's goal is to protect water quality and minimize pollution associated with boating and marina activities. To do so, it would be helpful to provide services, train customers for self-operation and to make information available to them. The Campaign suggests that once marinas have established the services, that they publicize them through signs, fact sheets, handbooks speakers, slide presentations, seminar materials and other activities.

In order to provide resources, information and assist in implementing services or outreach programs, the Campaign also recommends that marinas join the CCBN. The CCBN

mission is to assist boaters and marina managers to reduce pollution problems in order to protect and restore California's water quality. CCBN has three chapters: The Southern California Chapters meets in Los Angeles region, The Northern California Chapter meets in san Francisco Bay, and the Central Chapter meets either in Santa Cruz or Monterey. To join the CCBN, contact the facilitator of the CCBN chapter nearest to you.

Northern California Chapter Facilitator	*Central Coast Chapter Facilitator*	*Southern Coast Chapter Facilitator*
Miriam F. Gordon CA Coastal Commission 45 Fremont Street, Ste 200 San Francisco, CA 94105 (415) 904-5214 pH mgordon@coastal.ca.gov	Sara Fritz Save Our Shores (831)-462-5660 pH sfritz@saveourshore.org	Joel Hanson Santa Monica Bay Restoration Plan (213)-576-6648 pH jhanson@rb4.swrcb.ca.gov

III. DISCUSSION OF OIL RELATED SERVICES RECOMMENDED BY THE BOATING CLEAN & GREEN CAMPAIGN

❖ The Problem of Oil in the Bilge

The "bilge" is the area in the bottom of a boat underneath the engine that contains water and other liquid as it accumulates. Some bilges are connected through drain holes to the whole boat. Oily bilge discharges commonly occur when oil or fuel leaks into the bilge and is pumped out of the bilge to marine waters by the automatic bilge pump. Many boats are equipped with an automatic bilge pump that is activated when water in the bilge rises to a certain level (California Coastal Commission, 1998- Oil Pollution Solutions).

Petroleum products introduced in the environment are a chronic problem. Small incremental discharges of petroleum products add up to significant impacts. Accidental releases may occur when a boater does not know of the proper place to dispose of used oil (Commonwealth of Virginia, 2001 and Integrated Waste Management Board, 2001).

Oily discharges from bilges are highly toxic for the aquatic environment (International Marina Institute, 1994). Some factors reported to contribute to oil discharges from the boats are leaks from hydraulics, engine leaks, spills from containers used during oil changes, and insufficient room under the crankcase to securely collect used oil during an oil change (California Coastal Commission, 1998; California Coastal Commission, 1998- Oil Pollution Solutions)

Several options exist for controlling oil in the bilge. The options provided below represent a significant portion of the outreach messages provided to California boaters by

the Boating Clean and Green Campaign, although the outreach messages are not limited solely to how to minimize the discharge of oily bilge water.

❖ Using a No-Soap Approach

The Boating Clean and Green Campaign, in partnership with the Pacific Oil Spill Prevention Education Team (P.O.S.P.E.T.), recommends that boaters and marinas use a no-soap policy for removing oil from the bilge. [3] Applying soaps and detergents to remove an oily sheen from the water is illegal. Furthermore, applying soaps adds more pollutants to the water. Soaps and standard bilge cleaning products emulsify the oil or fuel, which breaks the hydrocarbon products into smaller droplets that, while they disappear, are still present and become dispersed through the water column. The Campaign recommends a no-soap approach to addressing oily discharges. This approach includes employing methods to prevent or minimize leaks and discharges of oil. However, once a bilge gets oily, the Campaign recommends that boaters clean bilges using a steam cleaning or pressure wash system, absorbent pads, and for large problems, bilge pump-out facilities.

❖ Methods for Reducing Oily Discharges

- **Preventive Engine Maintenance.** Most clean boating education programs agree that the best technique for minimizing the discharge of oily bilge water is spill and leak prevention. Boaters that regularly inspect and maintain their engines in order to fix the leaks of oil or fuel minimize the discharges of oil and fuel. Bilges that are kept clean at all times make it easy to spot problems and prevent contamination of the bilge (International Marine Institute, 1994; California Coastal Commission and the San Francisco Bay Conservation and Development Commission, 1998; California Coastal Commission, 1998- Oil Pollution Solutions).

  The Campaign recommends the following practices for preventive engine maintenance:

  1. Keep engines well tuned and operating at peak efficiency.
  2. Periodically check the engine, fuel and hydraulic systems for leaks, loose connections and deterioration of hoses, seals and gaskets.
  3. Use Coast Guard/approved alcohol-resistant fuel lines.

  4. When replacing, ensure new hose sections are right length. Hoses that are too long or stretched to fit can kink or collapse.

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[3] POSPET is a was formed by individuals involved in private, state, province and federal oil spill prevention programs in the Pacific Northwest states, including Alaska, British Columbia, Washington, Oregon, and California in order to provide a forum for information sharing and exploring methods for improving and expanding education for the boating community about oil spill prevention. The Boating Clean and Green Campaign is an active member in POSPET.

5. Replace front and rear crankcase seals and hoses and corroded oil pans.
6. Clean engine parts on land, over a leak-free container.
7. Use oil-only absorbents during maintenance. Keep one under the engine and use them while cleaning parts.

- **Oil Absorbent Pads**

  Since boaters vary in the degree to which they routinely inspect and maintain boat engines, and since small leaks and drips of fuel and oil into the bilge are a common occurrence, clean boating programs encourage boaters to use oil absorbent materials to prevent chronic discharges of leaking oil from the bilge. When safely secured in bilges, and under engines, hydraulic equipment and transmissions, absorbents provide a means to keep oil out of the water and to keep the bilge clean. These absorbent pads are made up of hydrophobic material that absorbs oil and repels water. These pads will capture the oil in bilge water before it is pumped overboard by a bilge pump.

  The pads should be inspected frequently, and replaced as necessary. (International Marine Institute, 1994; California Coastal Commission and the San Francisco Bay Conservation and Development Commission, 1998; California Coastal Commission, 1998- Oil Pollution Solutions; and Commonwealth of Virginia, 2001). It is important to instruct boat owners regarding the proper use and disposal of the pads since pads saturated with used oil can be flammable and are considered to be hazardous waste in California and some other states.

  Absorbent pads are available in a wide variety of forms including flat sheet, pillow, socks, booms and spaghettis. Flat absorbent sheets are best used for oil drips under the engine or to catch fuel spills at the fuel deck, while filling a portable tank, and to remove an oily sheen on the water. Bilge socks and pillows are designed for use in deeper bilge compartments.

SAFE HANDLING AND DISPOSAL OF BILGE PADS

When using absorbents in a boat's bilge, boaters need to secure them to prevent clogging or fouling the bilge pump and the bilge pump float or sensor. Oil and fuel are flammable. Most of the absorbent materials available commercially will not alter the composition of the absorbent liquid: thus the flammability of fuels is not changed after being absorbed. Oil Saturated absorbents should be kept away from heat and sources of ignition and

stored in well-ventilated areas. In California, absorbents saturated with oil must be disposed of as hazardous waste. Ask a marina or fuel dock operator to properly dispose of the saturated absorbent or call 1 (800) CLEANUP for a list of hazardous waste disposal locations, or visit the Commission's clean boating website (www.coastal.ca.gov) for a list of facilities that accept them (Boating Clean & Green Boating Clean and Green Campaign 2001).

- **Bilge Pump-out Facilities.** When removing large quantities of oil or oily water from the bilge, boaters should use a bilge pump-out facility. These services pump oily water from the bilge to an oil-water separation system**.** The oil is reclaimed for recycling. The waste-water is diverted either to a sanitary sewer system or to the nearby waterway, depending on the system and the requirements of state and local water quality agencies. (California Coastal Commission, 1998- Oil Pollution Solutions).

- **Steam Cleaning Services.** To clean an oily engine compartment or bilge that can not be adequately cleaned using absorbents, use steam cleaning services that collect the oily water for treatment by an oil-water separator or disposal as a hazardous waste. The service should not discharge oily water to the waterway (California Coastal Commission, 1998- Oil Pollution Solutions).

❖ Do-It-Yourself Boater Oil Changes in California

Research conducted by the Boating Clean and Green Campaign (1998) shows that 76% of boaters whose boats require an oil change in California are "do-it-yourselfers" (DIY). That is, they change the oil on their boats themselves. Changing oil on a boat can cause spills that release oil to the bilge and/or nearby waterways. As there is very little room between the bottom of the crankcase and the bottom of the boat, boaters often have trouble capturing drained oil from the crankcase without spilling oil into the bilge. Less than one-third of DIY's (27%) use a closed system, such as, oil change pump to perform the oil change. Closed systems usually result in a cleaner oil change as the oil is extracted by a tube through the dipstick to a container rather than the draining of oil from the bottom of the crankcase, as is typical of oil changes that don't use a pump. However, the process can still be messy if the boater fails to transfer the oil using a closed container. Because DIY oil changes are more likely to result in spills and discharges, the

Campaign encourages marinas to provide free (or low-cost) and convenient used oil collection facilities to boaters.

❖ The Benefits of Used Oil Collection

According to the California Integrated Waste Management Board (2001), approximately 1.2 billion gallons of used motor oil are generated annually in California. Used motor oil

contains heavy metals and other toxic substances, and is considered hazardous waste. About 67 gallons of crude oil are needed to produce one gallon of refined oil. The mandate of the used oil program of the California Integrated Waste Management Board (CIWMB) goal is to collect as much used oil as possible and to turn used oil into re-refined oil. Re-refining is energy efficient—less energy is required to produce a gallon of re-refined base stock than to produce a base stock from crude oil. According to the CIWMB 205 quarts of re-refined lubricating oil can be produced from one gallon of used oil. Also, re-refined oil prices are competitive with equivalent virgin oil products. If all the oil generated in America were collected and re-refined, it would provide enough motor oil for over 50 million cars each year. Used oil can be environmentally safe to burn as fuel in most industrial and commercial boilers that have been equipped with the proper pollution control equipment. Used oil can also be used to fuel asphalt, cement, and lime kilns (California Integrated Waste Management Board, 2001).

IV. **FUNDING AVAILABLE FOR OIL-RELATED FACILITIES**

The following information provides an overview of grants and loans available to fund oil-related facilities. To fund non-oil-related facilities, see the attached matrix of funding sources to determine what might be available for sewage pump-out facilities, recycling of solid waste, and other clean boating services (See Appendix D).

❖ California Integrated Waste Management Board (CIWMB) grants

The CIWMB provides grants to cities, based on the city's population, and to counties, based on the population of the unincorporated area of the county, for the implementation of local used oil collection and recycling programs. The CIWMB used oil grants include :

1. Used Oil Recycling Block Grant Program: This grant helps local governments establish or enhance permanent, sustainable used oil recycling programs. The block grant is noncompetitive and provide funds to establish and maintain used oil and filter collection programs. Grants are calculated at approximately 32 cents per capita using the Department of Finance's population statistics. However, small jurisdictions are guaranteed a minimum award of $5,000 for cities and $10,000 for counties. Jurisdictions may also apply regionally and pool their funds. Eligible applicants are limited to local governments, which are defined in statues as "any chartered or general law county, or any

city and county." Block grant funds can be used at the discretion of the local government recipient to fund the installation of oil-related services and educational programs for boaters.

2. Used Oil Nonprofit Grant Program: Used oil nonprofit grants are designed to increase oil collection opportunities thereby reducing the potential for illegal disposal. Nonprofit grants are competitive grants to nonprofit organizations for the collection of used oil. The estimated funding available for the used oil nonprofit grant is $3 million. Awards are

made every two years. The non-profit grants have been used to establish oil-related services at marinas and to support local boater education efforts.

3.- Used Oil Opportunity Grant: The used oil opportunity grant is designed to increase oil collection opportunities thereby reducing the potential for illegal disposal. Eligible applicants are local governments, California cities, counties or regional programs (consisting of several cities and/or counties). Opportunity grants are competitive grants that can provide additional funding to augment or expand oil collection and informational programs established by Used Oil Block Grants. Local governments use opportunity grants to fund the installation of oil-related services and educational programs for boaters. For contact information contact the Used Oil Grant Program (916) 341-6457 (California Integrated Waste Management Board 2001).

The California Integrated Waste Management Board recommends that marinas work in coordination with the local governments to obtain grants to increase oil collection opportunities thereby reducing the potential for illegal disposal. If you are interested in seeking funds from the Used Oil Program to provide for used oil collection and recycling, bilge pump-out, oil change, or absorbent pad distribution and collection services, you can contact the Boating Clean and Green Campaign at the California Coastal Commission for assistance in identifying the appropriate local agency. The Campaign can provide additional support and guidance in designing and implementing such a program. We recommend that you contact the Campaign for assistance in educating your local boating community about the use and existence of these facilities. To contact us, call 1(800)COAST4U.

- **Boating Infrastructure Grants (BIG) - Department of Boating and Waterways**

Marinas that are planning to improve docking facilities for transient, non-trailerable boats may be able to obtain funding for the collection of trash, oil, and other wastes. For more information about this program, contact the California Department of Boating and Waterways at (916) 263-1331.

- **Harbors and Watercraft Revolving Fund - Department of Boating and Waterways**

Based on the collection of vessel registration fees, the Department makes monies available for boating facilities development, including construction or improvement. Any small craft harbor construction or improvement project that is developed using this fund

must certify to the Department that there are adequate oil and solid waste recycling facilities, sewage pumpout facilities, and adequate restrooms. For more information about this program, contact the California Department of Boating and Waterways at (916) 263-1331.

V. MOBILE SERVICES FOR BOATERS

This survey addressed oil-related services for boaters *in marinas*. While this survey did not include an analysis of the services provided for boaters by contractors and those services that are mobile, this is an important element to consider in the framework of how environmental services are provided to boaters in California.

Mobile services for bilge pump-out, steam cleaning, and oil change, provide an alternative to bilge pump-outs and oil change services at fixed locations in marinas. There are numerous environmental benefits from these services when they are conducted appropriately, including using spill proof oil extraction, soapless bilge cleaning, and proper waste management and disposal techniques. When conducted properly, these services reduce the chance of accidental oil spills caused by do-it-yourself oil changes. They eliminate the potential for illegal disposal of used oil and filters by the do-it-yourself boater. In addition, by keeping engines clean and reducing oil spills to the bilge, these services reduce the need for detergents and reduce the incidence of overboard bilge water discharges, both of which can harm the marine environment (The Changing Tides 2000). These services are more convenient for the boater as they reduce the need for boaters to have their boats hauled out for service, to bring their boats to fixed facilities for service, or to conduct their own maintenance and then transport the wastes to recycling or disposal facilities. The main reason that boaters do not employ these more convenient services is the cost.

The Boating Clean and Green Campaign investigated the availability of mobile boat maintenance services for bilge pump-out and oil change in California, hoping to calculate the approximate amount of oil collected and recycled by these mobile services each month. In order to identify these services, the Campaign investigated advertisements in popular California boating publications, sought listings in boaters directories, and asked known service providers about the existence of other service providers.

The investigation found that in California there are few companies offering these services. The Campaign identified 28 such companies, but only 5 responded to the telephone inquiries made by the Campaign. Appendix E provides an overview of the companies identified during this investigation. The results of the investigation are not considered by the Campaign to be conclusive. It is likely that several other such services exist in areas where boats are heavily concentrated. Since only 5 companies responded to the telephone inquiry, the Campaign is unable to provide a reliable estimate of the combined amount of oil typically collected by all mobile boat maintenance services each month. However, one can extrapolate from the information gathered as follows. The

average amount of oil collected per month, based on the reports of these 5 companies, is 150 gallons. Applying this average amount to all 28 companies identified yields total a average monthly collection of approximately 4,200 gallons. Specific information provided each of the 5 companies is reported below.

- **Naut-A-Care Marine Services**

Naut-A-Care provides services in several southern California harbors from boats that are specially equipped to pump-out and steam clean bilges, remove hazardous wastes, and change oil. In the Newport area, Naut-A-Care provides steam-cleaning services to 20 to 25 bilges per month and collects between 1,000 and 1,500 gallons of bilge water per month. Naut-a-Care provides oil change services for 25 to 35 boats in the Newport area per month, collecting an average of 250 gallons of used oil per month. For bilge cleaning services, the average cost is $475 which includes a complete degreasing of the whole boat and bilge.

In Long Beach, Los Angeles and Huntington Beach, Naut-a-Care cleans 10 to 15 bilges per month, collecting between 250 and 500 gallons of bilge water. Between 150 and 170 gallons of used oil per month are being collected in Long Beach, Los Angeles and Huntington Beach from oil change services provided to an average of 20 boats per month. In this area, the average cost per bilge cleaning is $350. It is less expensive in this area than in Newport because they service more sailing vessels and these are less costly to service.

- **Mobile Marine Services**

In Dana Point and Marina del Rey areas, mobile services clean 8 to 12 boats per month collecting 10 gallons of bilge water. The costs of their service is $85 per hour plus a hazardous waste disposal charge of $1/gallon. This is an on-dock mobile service.

- **Alamitos Bay Marine**

In Long Beach, Alamitos Bay Marine serves 24 boats per month during the winter months, collecting 50 gallons/month of used oil. During the summer months, this company provides its service to 60-80 boats per month collecting 300 gallons. The cost of the service is $75/hour. This is an on-dock mobile service.

- **Diesel System-Marine Service**

In the area of Santa Barbara, Los Angeles, Orange, Ventura and San Diego counties, Diesel System-Marine Service serves an average of 15 boats per month collecting an average amount of used oil between 40-50 gallons. The cost of the service depends on the type of boat. This is an on-dock mobile service.

- **Port Side Marine Boatyard**

The Port Side Marine Boatyard offers on-dock mobile oil change services and serves an average of 20 boats per month in the area of Port San Luis Harbor, collecting between 10-15 gallons. This company charges $60/hour.

- **Seashine Company**

In the San Francisco Bay, Seashine Company offers a boat-to-boat service. This company collects between 80 to 100 gallons per month of bilge water serving an average of 4 to 5 boats. The cost of this service is between $225 and $250 per boat. This company does not provide oil change services.

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APPENDICES